

GRIDIN, A.D.; KANDLER, N.V., inzh.; RABINOVICH, M.L., inzh.

Response to D.N. Beletskii's article "Casting steel parts with closed risers." Stal' 18 no. 4:377-378 Ap '58. (MIRA 11:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut po organizatsii chernoy metallurgii. (for Gridin). 2. Dnepropetrovskiy zavod metal-lurgicheskogo oborudovaniya (for Kandler, Rabinovich).
(Founding)
(Beletskii, D.N.)

RABINOVICH, M.L., inzh.

Operation of complex 3-10 kv. power distribution systems. Energetik
(MIRA 17:9)
12 no.7:25-27 Jl '64.

RABINOVICH, M.L., inzh.; KUZNETSOV, V.F., inzh.

Group devices with semiconductor rectifiers for the electro-magnetic drives of electric cutouts. Prom. energ. 20 no.1:16-17 Ja '65. (MIRA 18:4)

RABINOVICH, M M

AUTHOR: None Given 30-58-4-41/44

TITLE: Dissertations. July-December 1957
(Dissertatsii. Iyul'-Dekabr' 1957 g.)
Department of Economics, Philosophy, and Law
(Otdeleniye ekonomicheskikh, filosofskikh i pravovykh
nauk)

PERIODICAL: Vestnik Akademii Nauk SSSR, 1958, Nr 4,
pp. 126 - 126 (USSR)

ABSTRACT:
R. A. Lokshin - Post-war Commerce of the Soviet Co-Operative Societies (Torgovlya sovetskoy potrebitel'skoy kooperatsii v poslevoyennyy period).
A. Ovezov - Improvement of the Utilization of Machines and Tractors in Cotton Growing MTS (Uluchsheniye ispol'zovaniya mashinno-traktornogo parka v khlopkovodcheskikh MTS).
M. M. Rabinovich - Fuel Basis of the Far East Iron Metallurgy (Toplivnaya baza dal'nevostochnoy chernoy metallurgii).

1. Industrial production--Bibliography 2. Bibliography--
Industrial production

Card 1/1

AUTHOR: Rabinovich, M.M.

68-58-5-3/25

TITLE: On the Problem of Rational Limit of Beneficiating Bureya
Coals for Coking (K voprosu o ratsional'nom predele
obogashcheniya bureinskikh ugley dlya koksovaniya)

PERIODICAL: Koks i Khimiya, 1958, Nr 5, pp 12 - 15 (USSR)

ABSTRACT: On the basis of theoretical balances of beneficiation
of the above coals (Table 2), the influence of ash content of
coke on the consumption of raw materials and output of blast
furnaces (Table 3), cost of winning, transport and beneficiation
of coal, calculated costs of 1 ton of intermediate washed
product, the yield of total and metallurgical coke, capital
costs on the construction of mine shafts, coal beneficiation
works and coke ovens, their optimum degree of beneficiation
of up to 14-15% ash content is calculated.
There are 6 tables.

ASSOCIATION: SOPS AN SSSR

Card 1/1

BEKMAN, Al'fred Andreyevich; RABINOVICH, M.M... retsenzent; KUSHCH, L.K.,
red.; MAKRUSHINA, A.N., red.izd-va; BOBROVA, V.A., tekhn.red.

[Manual on the use of nautical instruments] Rukovodstvo po
ekspluatatsii shturmanskih priborov. Moskva, Izd-vo "Rechnoi
transport," 1959. 117 p.

(Nautical instruments)

RABINOVICH, Moisey Markovich; RUL'KOV, Dmitriy Ivanovich; . . .
KREMLYANSKIY, A.N., red.; VOLCHOV, K.M., tekhn.. red.

[Principles of navigation at sea and on lakes] Osnovy mor-
skogo i ozernogo sudovozhdeniya; sbornik zadach. Leningrad,
Izd-vo "Rechnoi transport," 1962. 158 p. (MIRA 16:5)
(Navigation--Problems, exercises, etc.)

VOLOVIK, V.M.; RABINOVICH, M.M.

Use of aminazine for treating psychiatric patients at the Mogilev Psychoneurological Hospital. Vop.psikh. no.4:220-230 '60.

(MIRA 15:2)

1. Vneshtatnyye nauchnyye sotrudniki Instituta psikiatrii AMN SSSR.
(CHLORPROMAZINE—THERAPEUTIC USE)
(MENTALLY ILL—CARE AND TREATMENT)

MASLOV, A.A., podpolkovnik meditsinskoy sluzhby; RABINOVICH, M.N., polkovnik
meditsinskoy sluzhby

Organization of the oxygen supply for medical departments of a
hospital. Voen.-med. zhur. no.7:84 J1 '61. (MIRA 15:1)
(OXYGEN THERAPY APPARATUS AND SUPPLIES)
(HOSPITALS ADMINISTRATION)

RABINOVICH, M. N. (Colonel of the Medical Service) and MASLOV, A. A.

"Experience in the Organization of Oxygen Supply to Medical Departments of the Hospital."

Voyenna-Meditsinskiv Zhurnal, No. 12, December 1961, pp 62-63.

RABINOVICH, E.V.

RABINOVICH, E.V., M.P.; ZUBKOV, P.S., redaktor

[Economic analysis of collective farm production] *Ekonomicheskii analiz kolkhoznogo proizvodstva*. Krasn', Tatkniigoizdat, 1956. 117 p.
(Collective farms--Accounting) (MLRA 10:9)

14-57-7-15361

Translation from: Referativnyy zhurnal, Geografiya, 1957, Nr 7,
p 181 (USSR)

AUTHOR: Rabinovich, M. P.

TITLE: Distribution and Specialization of the Agriculture
in Tatar SSR (Razmeshcheniye i spetsializatsiya
sel'skogo khozyaystva Tatarii)

PERIODICAL: S. kh. Povolzh'ya, 1957, Nr 2, pp 74-77

ABSTRACT: The author discusses growing of edible vegetables on
the collective farms in the fore-mountain areas
of hemp growing in the districts most suitable for
this crop. He indicates that edible vegetables are
grown chiefly in four regions: Stolbishchi, Verkhniy
Uslon, **Vysokaya gora** (adjacent to the city of Kazan),
and the Bugul'ma petroleum region. Hemp is grown
mayskiy regions.

D. I. K.

Card 1/1

RABINOVICH, M.P.; RAKHIMOV, D.Z.; LEONIDOV, P.I., red.; GALKINA, V.N..
tekhn.red.

[Organization of business accounting in individual production
units of collective and state farms] Organizatsiya vnutri-
khoziaistvennogo rascheta v kolkhozakh i sovkhozakh. Kazan'.
Tatarskoe knizhnoe izd-vo, 1960. 49 p. (MIRA 14:1)
(Tatar A.S.S.R.--Agriculture--Finance)

EVRANOVA, V.G., dotsent, kand. veterin. nauk; PAVLOVSKIY, Ye.N., prof.
otv.red.; VASNETSOV, N.V., prof., red.; VERESHCHAGIN, M.N.,
prof., red.; ZAYTSEV, V.G., prof., red.; KAZAKOV, Kh.Sh., prof.,
red.; MOSIN, V.V., prof., red.; STUDENTSOV, A.P., prof., red.;
GALEYEV, V.V., dotsent, red.; LYSOV, V.F., dotsent, red.;
RABINOVICH, M.P., dotsent, red.; SABIN, I.M., dotsent, red.

[Methods for the laboratory diagnosis of the principal helmin-
thiases of farm and commercial animals and a comparative analysis
of their efficiency]. Metody laboratornoi diagnostiki glavneshikh
gel'mintozov sel'skokhoziaistvennykh promyslovykh zhivotnykh i
sравнител'nyi analiz ikh effektivnosti. Kazan', 1960. 417.p.
(Kazan. Veterinarnyi institut. Uchenye zapiski, vol. 72).

(MIRA 17:7)

ABDULLIN, Ya.G., kand. fil. nauk, red.; NESNELOV, O.V., kand. ist. nauk, red.; RABINOVICH, V.P., kand. sel'khoz. nauk, red.

[Collection of papers of a scientific conference] Sbornik dokladov nauchnoi konferentsii. Kazan', 1963. 98 p.
(MIRA 16:10)

1. Kazanskiy veterinarnyy institut.
(Agriculture--Congresses)

18(5), 8(5)

SOV/112-59-5-9052

Translation from: Referativnyy zhurnal. Elektrotehnika, 1959, Nr 5, p 91 (USSR)

AUTHOR: Rabinovich, M. S., Kolokolov, V. V., and Levitan, M. Ye.

TITLE: Automatic Equipment of Mine Water-Pumping Outfits Should be Improved

PERIODICAL: Ugol' Ukrayny, 1958, Nr 4, pp 42-45

ABSTRACT: The "Krasnyy metallist" plant, Konotop, manufactures AVV-3 high-voltage automatic equipment for water-pumping outfits only of a regular mine type. This fact excludes the possibility of using the equipment outside the near-shaft installations, in gas- and dust-hazardous mines. There are many pumping plants with a high-voltage drive situated at the extremes of the mine field and at the levels lower than the shaft yard. These water-pumping outfits could not be automated until recently because of the above reasons. Now this problem is being successfully solved by means of AVN-1 equipment manufactured by the "Krasnyy metallist" plant; the equipment is explosion-proof and is intended for automating water-pumping installations with low-

Card 1/2

SOV/112-59-5-9052

Automatic Equipment of Mine Water-Pumping Outfits Should be Improved
voltage motors. The Giprouglaavtomatizatsiya Institute has modernized this equipment for use in automating high-voltage water pumping. The cost of automation as compared to that with the AVV-3 equipment is lower by 25-30%. The principal scheme for controlling high-voltage water pumps by means of the modernized AVN-1M equipment is presented, as well as a description of its functioning in the pumping plant at the number 1 slope of No. 5-6 shaft imeni Dimitrov, Donbass.

S.A.P.

Card 2/2

RABINOVICH, M.S., kand.tekhn.nauk; MATVEYEV, M.T.

Means of automatization recommended for use during 1961. Ugol' Ukr. 5
(MIRA 14:3)
no.3:36-38 Mr '61.

1. Direktor Stalinskogo filiala instituta Giprouglaavtomatizatsiya
(for Rabinovich). 2. Glavnnyy spetsialist (Gosudarstvennogo nauchno-
tekhnicheskogo komiteta USSR (for Matveyev).
(Ukraine—Coal mines and mining)
(Automatic control)

RABINOVICH, M.S., kand.tekhn.nauk; ZLODEYEV, A.V., inzh.; PAS'KO, A.Ye.

Mechanization and automation of haulage and coal car change in
the mine surface building of the Lenin Mine No.5. Ugol' Ukr.
5 no.12:9-11 D '61. (MIRA 14:12)

1. Donetskiy filial instituta Giprougleavtizatsiya (for Rabinovich, Zlodeyev).
2. Glavnyy mekhanik shakhty no.5 imeni Lenina tresta Gorlovskugol' (for Pas'ko).
(Donets Basin-Mine haulage)
(Automatic control)

RABINOVICH, M.S., kand.tekhn.nauk

Advantages of the use of automation in the mines under the
Donetsk Economic Council. Ugol' 37 no.6:9-13 Je '62.

(MIRA 15:7)

1. Direktor Donetskogo filiala Gosudarstvennogo proyektno-konstruktorskogo instituta avtomatizatsii rabot v ugol'noy promyshlennosti.
(Donetsk Province--Coal mines and mining—Automation)

RABINOVICH, M.S., kand. tekhn. nauk; GOLUBEV, V.A., gornyy inzh.;
BORODKIN, A.F., gornyy inzh.

Reliability of mine automatic control equipment. Ugol' 38
no.12:41-45 '63. (MIRA 17:5)

1. Donetskiy filial Gosudarstvennogo proyektno-konstruktorskogo instituta avtomatizatsii rabot v ugol'noy promyshlennosti.

GINZBURG, V.B., inzh.; MEL'KUMOV, L.G., inzh.; RABINOVICH, M.S., kand.
tekhn. nauk

Reliability of the speed control relay. Mekh. i avtom. proizv.
18 no.1:39-40 Ja '64. (MIRA 17:8)

RABINOVICH, N.S., kand. tekhn. nauk; OSTAPEJKO, V.A., kand. tekhn. nauk; FASHEVSKIY, Yu.G., inzh.; MUNDSHUKOVA, V.I., inzh.; SHKIYAR, A.T., inzh.; LEVITAN, M.Ye., inzh.

[Equipment for the automation of industrial processes in the coal industry; a catalog and handbook] Sredstva avtomatizatsii proizvodstvennykh protsessov v ugol'noi promyshlennosti; katalog-spravochnik. Moskva, Nedra, 1965. 166 p.
(MIRA 18:8)

RABROVICH, N. S.

"Investigation of the Operation of Underground Sedimentation Tanks and the Mechanization of Their Cleaning." Cand Tech Sci, Donets Order of Labor Red Banner Industrial Inst imeni N. S. Khrushchev, Min Higher Education USSR, Stalino, 1955. (Iz, No 12, Mar 55)

So: Su. No 670, 29 Sept 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (15)

5.3900

77351
SOV/79-30-1-12/78

AUTHORS: Shostakovskiy, M. F., Rabinovich, M. S., Preobrazhenskaya, Ye. V., Zykova, G. N.

TITLE: Investigation of the Synthesis of Precursors and Structural Parts of Antibiotics. I. α -Aminoadipic Acid

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 1, pp 67-71 (USSR)

ABSTRACT: The α -aminoadipic acid can be synthesized by the following two methods: (1) by condensation of γ -bromobutyronitrile with N-acetylaminomalonic ester followed by hydrolysis and decarboxylation; and (2) by amination of diethyl ester of α -bromoadipic acid with subsequent hydrolysis. The yield of α -aminoadipic acid prepared by the first and second methods is 44% (based on starting γ -bromobutyronitrile) and 82% (based on diethyl ester of α -bromoadipic acid), respectively. The technical α -aminoadipic acid is purified by dissolving in 1 N NaOH and treatment with

Card 1/4

Investigation of the Synthesis of
Precursors and Structural Parts of
Antibiotics. I. α -Aminoadipic Acid

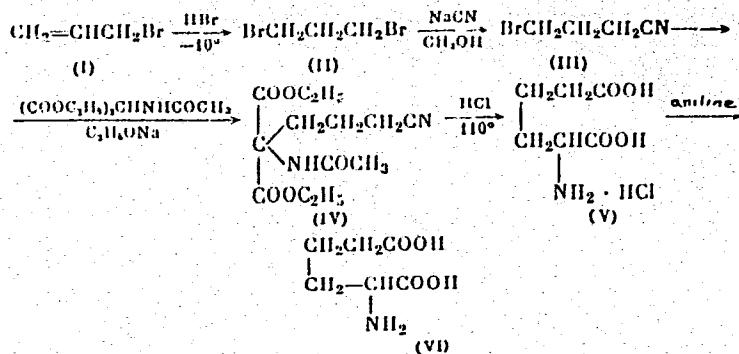
77351
SOV/79-30-1-12/78

activated charcoal (pH 3.0). Upon acidification (pH 3-3.5) of the colorless filtrate crystalline α -aminoadipic acid precipitates (yield 94%), mp 173-174° (decom). Heating of diethyl ester of α -bromo-adipic acid in absolute alcohol saturated with gaseous ammonia in the autoclave at 100-110° (pressure 7 atm) for 12 hr yields amide of α , α' -piperidonecarboxylic acid, mp 168-169°. When α -aminoadipic acid is recrystallized from water, about 50% of it is converted into α , α' -piperidonecarboxylic acid. Esterification of α -aminoadipic acid by heating with isopropyl alcohol in the presence of HCl yields isopropyl ester of α , α' -piperidonecarboxylic acid, mp 65.6-65.5°. This was verified by parallel synthesis of this ester from piperidonecarboxylic acid. The α -aminoadipic acid was also synthesized in the following way:

Card 2/4

Investigation of the Synthesis of Precursors and Structural Parts of Antibiotics. I. α -Aminoadipic Acid

77351
SOV/79-30-1-12/78



The authors wish to thank A. S. Khokhlov and Ye. M. Kleyner for samples of α -amino adipic acid, and F. M. Meller for performing elemental analysis. There are 10 references, 2 Soviet, 5 U.S., 3 German. The U.S. references are: Schwenk, E., Papa, D., J. Am. Chem. Soc., 70, 3626 (1948); Bun Hof, Demorsman, J. Org. Ch., 18, 649 (1953); Waalkes, T. P., Fones, W. S., White, J.,

Card 3/4

Investigation of the Synthesis of
Precursors and Structural Parts of
Antibiotics. I. α -Aminoadipic Acid

77351
SOV/79-30-1-12/78

J. Am. Chem. Soc., 72, 5760 (1950); Derick, C. G.,
Hess, R. W., J. Am. Chem. Soc., 40, 547 (1918); Brown,
G. B., Baker, B. R., Bernstein, S., Safir, S., J.
Org. Ch., 12, 162 (1947).

ASSOCIATION: All-Union Scientific Research Institute of Antibiotics
(Vsesoyuznyy nauchno-issledovatel'skiy institut
antibiotikov)

SUBMITTED: December 29, 1958

Card 4/4

5.3900

77352
SOV/79-30-1-13/78

AUTHORS: Rabinovich, M. S., Shostakovich, M. F., Preobrazhen-Skaya, Ye. V.

TITLE: Investigation of the Synthesis of Precursors and Structural Parts of Antibiotics. II. Separation of α -Aminoadipic Acid Into Optically Active Forms

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 1, pp 71-75
(USSR)

ABSTRACT: Acyl derivatives were used in this work for separation of optically active forms of α -aminoadipic acid. N-benzoyl- L , d, α -aminoadipic acid, not described in literature, was synthesized in the following way: To the mixture of L , d, α -aminoadipic acid (16 g), sodium bicarbonate (90 g), and water (300 ml), after heating for 1.5 hr, add benzoyl chloride (42 g) with vigorous stirring. Continue stirring for another 4 hr, remove excess sodium bicarbonate by filtration, acidify filtrate with HCl up to \sim pH 2.0. Recrystallize the obtained acid from water, yield 18 g (68%),

Card 1/4

Investigation of the Synthesis of Precursors
and Structural Parts of Antibiotics. II.
Separation of α -Aminoadipic Acid Into
Optically Active Forms

77352
SOV/79-30-1-13/78

mp 183-184°. Separation of N-benzoyl- L , d, α -amino adipic acid into optically active forms was carried out with brucine, L -threo-1-p-nitrophenyl-2-amino-propane-1,3-diol, and d,L-threo-1-p-nitrophenyl-2-amino-propane-1,3-diol. In all cases the following optically active forms of N-benzoyl- L , d, α -amino adipic acid were obtained: N-benzoyl- L, α -amino adipic acid, mp 177-179°, $[\alpha]_D + 17.2\text{-}17.3$; N-benzoyl- d, α -amino adipic acid, mp 178-180°, $[\alpha]_D -16.0$ to 18.6°.

The L -form of amine produces a crystalline salt of d,N-benzoyl derivative, and the d-form, the crystalline salt of L , N-benzoyl amino adipic acid. Hydrolysis of optically active forms of N-benzoyl- α -amino adipic acid yields L, α -amino adipic acid, mp 184-185°, $[\alpha]_D +25.5$ (with 1.3, 6 N HCl) and d, α -amino adipic acid, mp 183-184°, $[\alpha]_D -25$ (with 1.3, 6 N HCl). The authors, together with T. P. Verkhovtsev (VNIIA), established that the microorganism *Penicillium chrysosporium* separates

Card 2/4.

Investigation of the Synthesis of Precursors
and Structural Parts of Antibiotics. II.
Separation of α -Aminoadipic Acid Into
Optically Active Forms

77352
SOV/79-30-1-13/78

L, d , α -aminoadipic acid into two optically active forms. During its life it consumes only the L -form of α -aminoadipic acid. The authors succeeded in obtaining d -form of α -aminoadipic acid ($[\alpha]_D -25.9^\circ$) from the racemate in which the above microorganism was cultivated for 5-6 days. The work devoted to the separation of racemic amino acids with optically active forms of L -threo-1-p-nitrophenyl-2-aminopropyl-1,3-diol is to be continued. The authors thank M. A. Guberniyev for his interest in this work. There are 8 references, 3 U.S., 1 German, 1 French, 1 Italian, 1 Swedish, 1 Belgian. The U.S. references are: Borsoon, H., Deasy, C. L., Haagen-Smith, A. L., et al., J. Biol. Ch., 176, 1386 (1948); Greenstein, P., Birnbaum, S. M., et al., J. Am. Chem. Soc., 75, 1994 (1953); Adams, R., Binder, L. O., J. Am. Chem. Soc., 63, 2773 (1941).

Card 3/4

Investigation of the Synthesis of Precursors
and Structural Parts of Antibiotics. II.
Separation of α -Aminoadipic Acid Into
Optically Active Forms

77352
SOV/79-30-1-13/78

ASSOCIATION: All-Union Scientific Research Institute of Antibiotics
(Vsesoyuznyy nauchno-issledovatel'skiy institut anti-
biotikov.)

SUBMITTED: December 29, 1958

Card 4/4

SHOSTAKOVSKIY, M.F.; RABINOVICH, M.S.; LEVITOY, M.M.; VERKHVTSEVA, T.P.;
PREOBRAZHENSKAYA, Ye.V.; KULIKOVA, G.N.; KALINOVSKIY, O.A.

Synthesis of the precursors and fragments of antibiotics. Part 4:
Thioglycolic acid derivatives. Zhur.ob.khim. 31 no.5:1453-1458
(MIRA 14:5)
My '61.

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.
(Acetic acid) (Antibiotics)

LEVITOV, M.M.; VERKHOTSEVA, T.P.; RABINOVICH, M.S.; PREOBRAZHENSKAYA, Yo.V.;
KULIKOVA, G.N.; BUIANOVSKAYA, I.S.; SHNEYERSON, A.N.

Biosynthesis of new penicillins using propylmercaptoacetic
acid derivatives as precursors. Antibiotiki 6 no.7:575-581
Jl '61. (MIRA 15:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.
(PENICILLIN) (ACETIC ACID)

RABINOVICH, M.S.; LEVITOV, M.M.; KULIKOVA, G.N.; YAKUSHINA, L.M.;
VERKHOVTSEVA, T.P.; MELLER, F.M.

Synthesis of precursors and fragments of antibiotics. Part 7:
Carboxy derivatives of mercaptoacetic acid. Zhur.ob.khim. 32
no.4:1167-1172 Ap '62. (MIRA 15:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.
(Acetic acid) (Antibiotics)

KOSTROMINA, O.Ye.; RABINOVICH, M.S.

Synthesis of precursors and fragments of antibiotics. Part 10:
Synthesis of half-esters of α -phenoxyadipic and phenoxy-

malonic acids. Zhur. ob. khim. 33 no.5:1658-1660 My '63.

(MIRA 16:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.
(Adipic acid) (Malonic acid)

RABINOVICH, M.S.; LEVITOV, M.M.; KULIKOVA, G.N.; VVERKHVTSEVA, T.P.;
MELLER, F.M.

Study of the precursors and fragments of antibiotics. Part 9:
Carbonyl and tricarboxylic derivatives of thioglycolic acid.
Zhur. ob. khim. 33 no. 10:3135-3140 O '63. (MIRA 16:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov.

TEBYAKINA, A.Ye.; RABINOVICH, M.S.; ZHDANOVICH, Yu.V. STRUKOV, I.T.;
KONDRAT'YEVA, A.P.; BUYANOVSKAYA, I.S.; SHNEYERSON, A.N.;
GRAGINSKAYA, P.S.; DRUZHININA, Ye.N.

Alpha-aminobenzylpenicillin (ampicillin) and its microbiological
studies. Antibiotiki 9 no.5: 38-392 My '64. (MIRA 18:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov,
Moskva.

L 64154-65 EWA(k)/FBD/EWG(p)/EWT(1)/EPF(c)/EEC(k)-2/EPA(w)-2/T/SEC(b)-2/
ACCESSION NF: AP5019591 EMP(k), EWA(m)-2/EWA(w) UR/0386/65/001/006/0018/0023
SCTB/IJP(c) WG

AUTHOR: Askar'yan, G. A.; Rabinovich, M. S.; Savchenko, M. M.; Smirnova, A. D.

TITLE: Discovery of a fast photoionization halo and a cloud of concentrated long-lived ionization from a shock wave of a breakdown in the laser beam

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniya, v. 1, no. 6, 1965, 18-23

TOPIC TAGS: laser, breakdown, photoionization, ionization, plasma, laser beam, multiphoton absorption, gas breakdown

ABSTRACT: The results are presented of an experimental study of the ionization halo produced during breakdown of a gas by a laser beam in the region of the breakdown. The laser beam from a Q-switched laser with a rotating prism was focused between a horn equipped with a detector and an antenna of an 8-mm oscillator by means of a lens with a 5-cm focal length. This arrangement made it possible to make simultaneous measurements of the transmitted and reflected microwave radiation displayed on an oscilloscope. A comparison of the degree of attenuation of the microwaves determined from the change in the detector current and the current corresponding to the voltage at the time of the appearance of the breakdown shows that microwave radia-

Card 1/2

L 64154-65
ACCESSION NR: AF5019591

tion is strongly dissipated in the plasma of the halo. The lifetime of the plasma in the halo is relatively long, reaching hundreds of usec. The maximum attenuation occurs within a period less than 5 usec after the breakdown. The authors also observed an ionization halo caused by radiation from the region heated by the laser beam, where the radiation is propagated ahead of the shock wave. The attenuation and scattering by this halo should increase with the wavelength of the microwave radiation. The high degree of ionization and heating due to photoionization and the shock wave near the region of the breakdown result in a relatively long life-time of the plasma. Orig. art. has: 2 figures. [CS]

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences, SSSR)

SUBMITTED: 10May65

NO REF Sov: 002

ENCL: 00

OTHER: 002

SUB CODE: OP

ATD PRESS: 4065

Mli
Card 2/2

L 64775-65 EEC(k)-2/EWA(h)/EWA(k)/EWT(l)/EWT(m)/FBD/ENP(i)/ENP(b)/T/ENA(m)-2/ENP(k)/
ACCESSION NR: AP5021736 E/P(e) SCTB/IJP(g) WG/HH UR/0386/65/002/002/0095/0097

AUTHOR: Bedilov, M. R., Likhachev, V. M., Mikhaylov, G. V., Rabinovich, M. S. 44-58

TITLE: Use of the pinch-effect for optical laser pumping 25-44

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu.
Prilozheniya, v. 2, no. 2, 1965, 95-97, and insert attached to p. 97

TOPIC TAGS: glass laser, neodymium laser, ruby laser, laser pumping, optical
pumping, pinch pumping, pinch effect

ABSTRACT: Experimental use of the pinch-effect in gas for the optical pumping of
 Nd^{3+} glass and ruby lasers is reported at currents up to 300 k-a with a rise rate of
 3×10^{11} amp/sec and discharge periods of approximately 4 usec. The energy source
was a specially constructed low-induction 30- μf , 9-kv capacitor bank. The experimental
pump light efficiency in the 2000-6000 Å region using krypton gas at a 20 k-a/cm²
current density was ~12%, and for a 1.2-kj input energy the output energy was ~150 j,
of which 50-70 j was in the 4000-6000 Å region, and 80-100 j in the 2000-4000 Å
region. The pump light spectrum was continuous and similar to the emission spectrum
of a black body at 35,000K. The neodymium glass rod with silver-coated ends (coef-
ficient of reflection 0.92 and 1.0) was 53 mm long and 7.6 mm in diameter. The

Card 1/2

L 64775-65

ACCESSION NR: AP5021736

stimulated emission, which occurred at 1.06μ after ~ 15 usec pumping, was observed for 8 usec by an FEU-22 photomultiplier equipped with suitable filters. To achieve laser action in the available ruby crystals for the given pinch power, a combined pumping system was used. By placing a ruby crystal in the common focus of a double-branch elliptical reflector, and a quartz discharge chamber (100 mm long and ~ 30 mm in diameter) and an IFN-800 xenon lamp at the two other foci, the stimulated emission was observed. Under these pumping conditions the pulsed emission frequency increased approximately tenfold, with a 2-2.5-fold increase in the peak pulse amplitude. Orig. art. has: 2 figures. [YK]

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR
(Physics Institute, Academy of Sciences, SSSR)

SUBMITTED: 02Jun65

ENCL: 00

44, CS
SUB CODE: EC

NO REF SOV: 001

OTHER: 001

ATD PRESS: 1/679

Card 2/2

ASHAR'YAN, G.A.; RABINOVICH, M.S.; SMIRNOVA, A.D.; STUDENOV, V.B.

Polarization of the ionization halo of a light spark in a
constant electric field. Pis'ma v red. Zhur. eksper. i teoret.
fiz. 2 no. 11:503-506 D '65 (MIRA 1961)

1. Fizicheskiy institut imeni Lebedeva AN SSSR. Submitted
October 18, 1965.

L 17535-66 EWT(d)/EWT(l)/ETC(f)/EPF(n)-2/EWG(m) IJP(c) WW/AT

ACC NR: AP6006794

SOURCE CODE: UR/0386/66/003/001/0012/0014

AUTHOR: Kulagin, S. G.; Likhachev, V. M.; Markuzon, Ye. V.; Rabinovich, M. S.; Sutovskiy, V. M.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskiy B
institut Akademii nauk SSSR)

TITLE: States with inverse population in a pinched discharge

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu.
Prilozheniya, v. 3, no. 1, 1966, 12-14

TOPIC TAGS: discharge plasma, plasma pinch, stimulated emission, laser R and D, gas
laser, argon

ABSTRACT: The authors show that states with a negative temperature exist in a
pinched discharge plasma. This phenomenon is demonstrated by a pulse of stimulated
emission which coincides with the moment of pile-up. An installation for generating
currents up to 15 Ka with a discharge period of 2-5 usec was used in the experi-
ments. The quartz discharge tube was 100 cm long and 2.5 cm in diameter. Annular
21
41
55

Card 1/2

L 17535-66

ACC NR: AP6006794

3

copper electrodes were used with an internal diameter of 2.5 cm. The optical resonator was made up of two spherical dielectric mirrors. The coefficients of reflection for the mirrors in the emission zone were 90 and 45%. Condensers with a capacitance of 0.1, 0.4, and 2.5 μ f and a voltage of 20-30 kv were used as the power source. The working gas was spectrally pure argon at a pressure of 10^{-2} mm Hg. A curve is given showing the intensity of stimulated emission as a function of pressure. Emission is observed on the 4765 Å line of singly ionized argon at pressures from $9 \cdot 10^{-3}$ - $3 \cdot 10^{-2}$ mm Hg. This is also the best pressure range for generation of a pinch discharge. Experiments were done at a pressure of $1.25 \cdot 10^{-2}$ mm Hg which corresponds to the maximum intensity. The photoelectric method was used for recording the emission pulse. Emission lags 0.2 μ sec behind the current and lasts for 0.2 μ sec. Emission power at the maximum is 20-25 kw. Calculations show that the emission pulse corresponds approximately with the time of discharge compression. "The authors thank corresponding member AN SSSR A. M. Prokhorov for interest in the work and useful consultation and also laboratory workers M. R. Bedilov and Yu. K. Dmitriyev for assistance in carrying out the experiment." Orig. art. has: 3 figures.

[14]

SUB CODE: 20/ SUBM DATE: 11Nov65/ ATD PRESS: 1211

Card 2/2

RABINOVICH, M.S., professor (Omsk, pl. Dzerzhinskogo, d.1. kv. 17)

History of the Siberian surgical instrument factory in Tobolsk.
Vest.khir. 77 no.4:127-132 Ap '56. (MLRA 9:8)

(Surgery, OPERATIVE, appar. and instruments
surg. instrument factory in Siberia)

RABINOVICH, M.S., professor (Omsk)

History of the first laparotomies in Siberia. Vest.khir. 77 no.5:
123-128 My '56.

(MLRA 9:8)

(LAPAROTOMY, history.
in Russia (Rus))

RABINOVICH, M.S., prof. (Novosibirsk, ul. Revolyutsii, d.27)

E.G.Salishchev, first Siberian surgeon-clinician. Vest.khir. 80
no.1;134-143 Ja '58. (MIRA 11:4)

(SURGERY, hist.

contribution of Erast G.Salishchev (Bus))
(SALISHCHEV, ERAST GAVRILOVICH, 1851-1901)

RABINOVICH, M.S., prof. (Omsk)

Professor Vladimir Mikhailovich Mysh. Urologiia no.6:3-5'62
(MIRA 16:7)
(MYSH, VLADIMIR MIKHAILOVICH, 1873-1947)

RABINOVICH, M.S.; LEVITOV, M.M.; KULIKOVA, G.N.; BUYANOVSKAYA, I.S.;
SHNEYERSON, A.N.

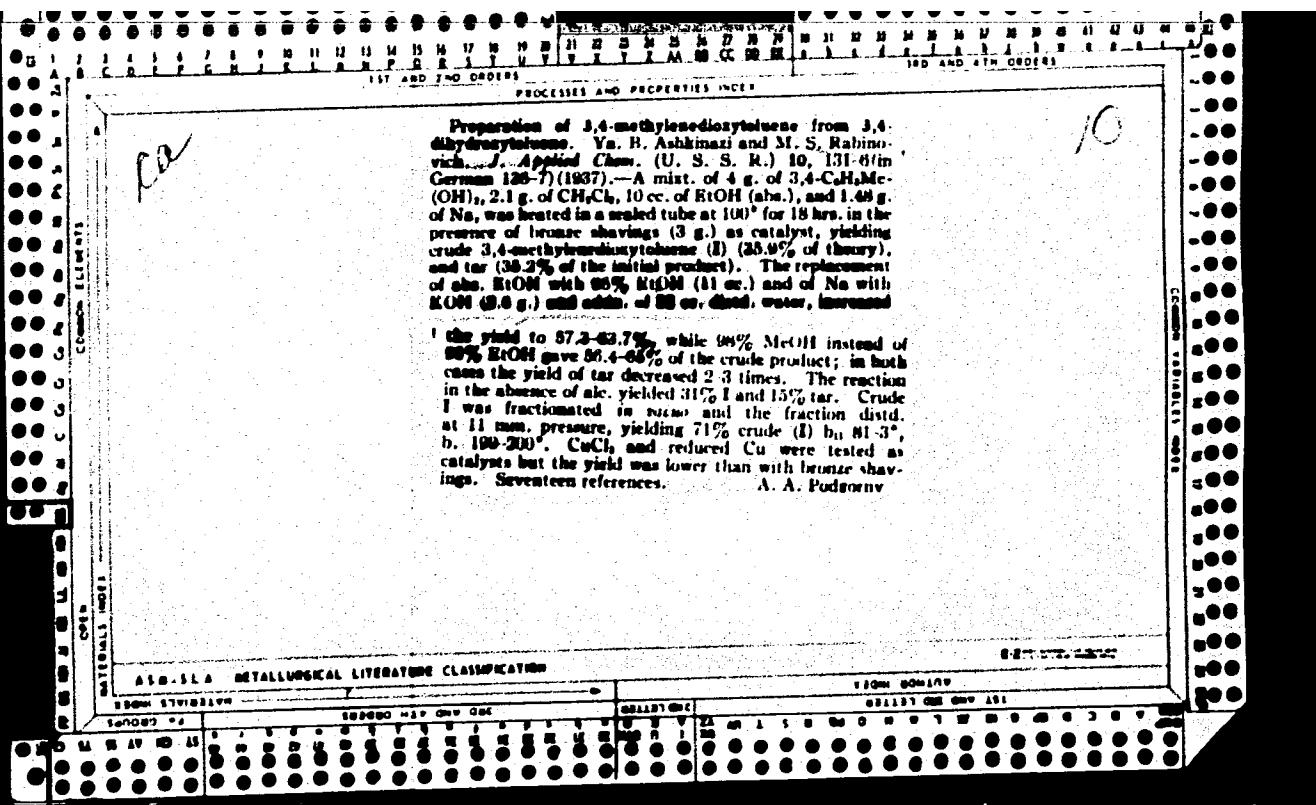
New penicillins, derivatives of thioglycolic acid. Antibiotiki
9 no.5:392-396 My '64. (MIRA 18:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut antibiotikov,
Moskva.

Reducing 3-nitro-4-hydroxytoluene to 3-amino-4-hydroxytoluene. V. B. Ashkinazi and M. S. Ral'dushkin. *J. Applied Chem. (U. S. S. R.)* 7, 939-43 (1954).—According to the 1st method developed by the authors, a 2-l. flask was charged with 750 cc. of 10% NaOH and 20 g. of 3-nitro-4-hydroxytoluene, and H₂S was passed through the reddish soln. at a velocity of 15-20 cc. per sec., the temp. being maintained at 55-65°. The soln. was finally cooled and filtered through a Buchner filter, washed with cold H₂O and, while still wet, the product was recrystd. from cold H₂O, pressed and dried. These crystals are unstable (they acquire a brownish color on standing) and they are more stable when dried rapidly in a porcelain dish. They then m. 133.5-4.5°, and after recrystd. from alc. they m. 135°. There remains a black residue of 1.5-2.0%.

After filtering the hot soln. of the 3-nitro-4-hydroxytoluene, the final yield of the latter being 72.1%. According to a 2nd method 355 g. of a boiling hot 9.5% (calcd. on anhyd. Na₂S) soln. of crystd. Na₂S is mixed during 1.5 hrs. with 20 g. fumed nitrohydroxytoluene. After the disappearance of the reddish color, the soln. is cooled to 55° and 50 g. Na₂CO₃ is then added and after it is thoroughly mixed, is cooled and the sept. crystals of the amino-hydroxytoluene are recrystd. from hot water. By the use of Na₂SO₄ instead of Na₂CO₃ a more efficient pptn. of the final product may be attained. This raises the yield from 74.3 to 91.3%. A. A. Bechtling

ASA-1A METALLURGICAL LITERATURE CLASSIFICATION

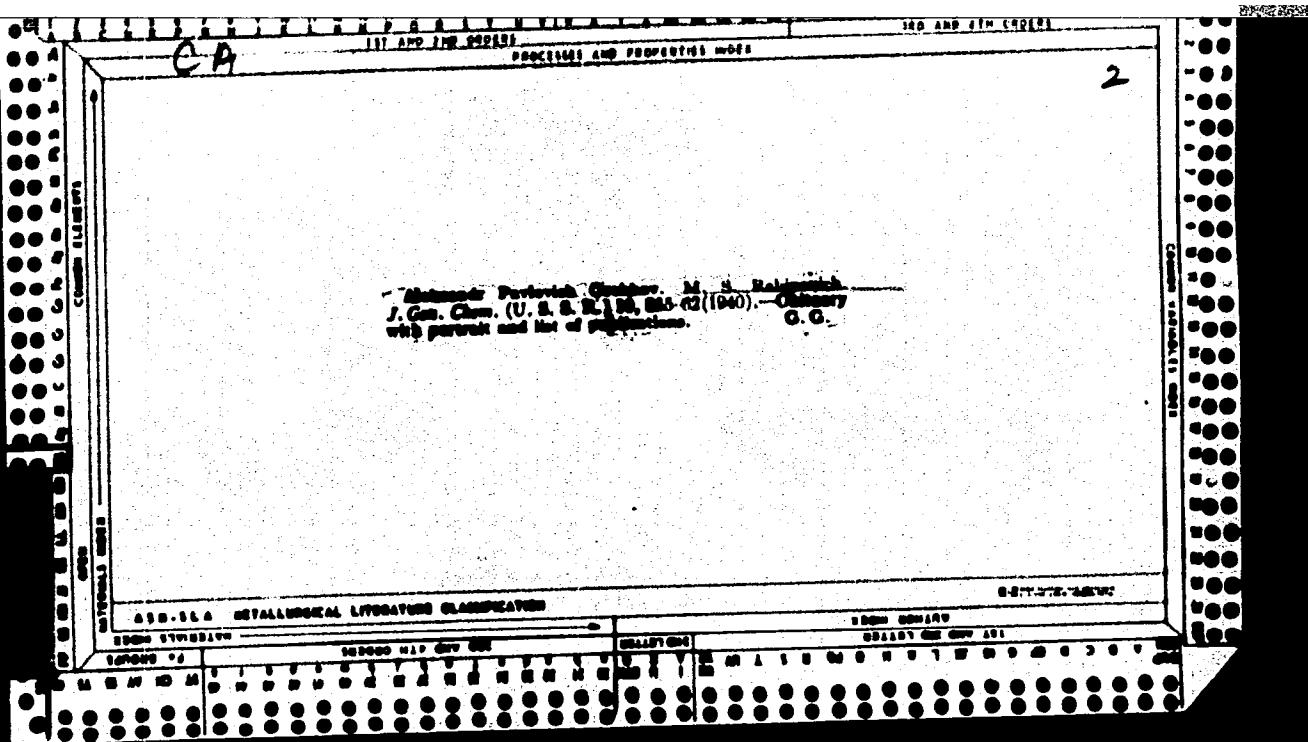


RABILOVICH, M. S., KONOVALOVA, R. A.

"On the Anesthetic Derivatives Convolvine and Convolamine," Zhur. Obshch. Khim., 9, No. 1, 1939. Alkaloid Department, Scientific-Research Chemico-Pharmaceutical Institute imeni S. Grdzhanikidze. Received 10 May 1938

Report U-1517, 22 Oct 1951

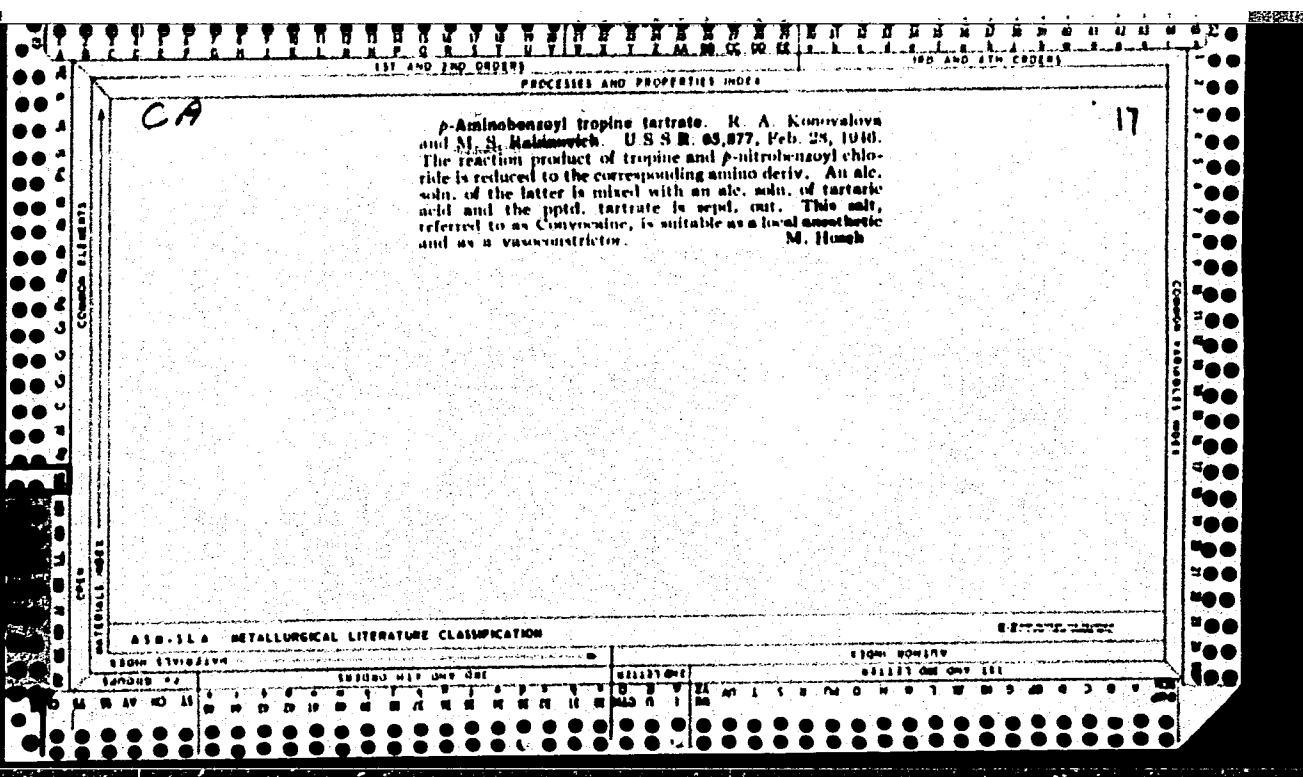
"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001343

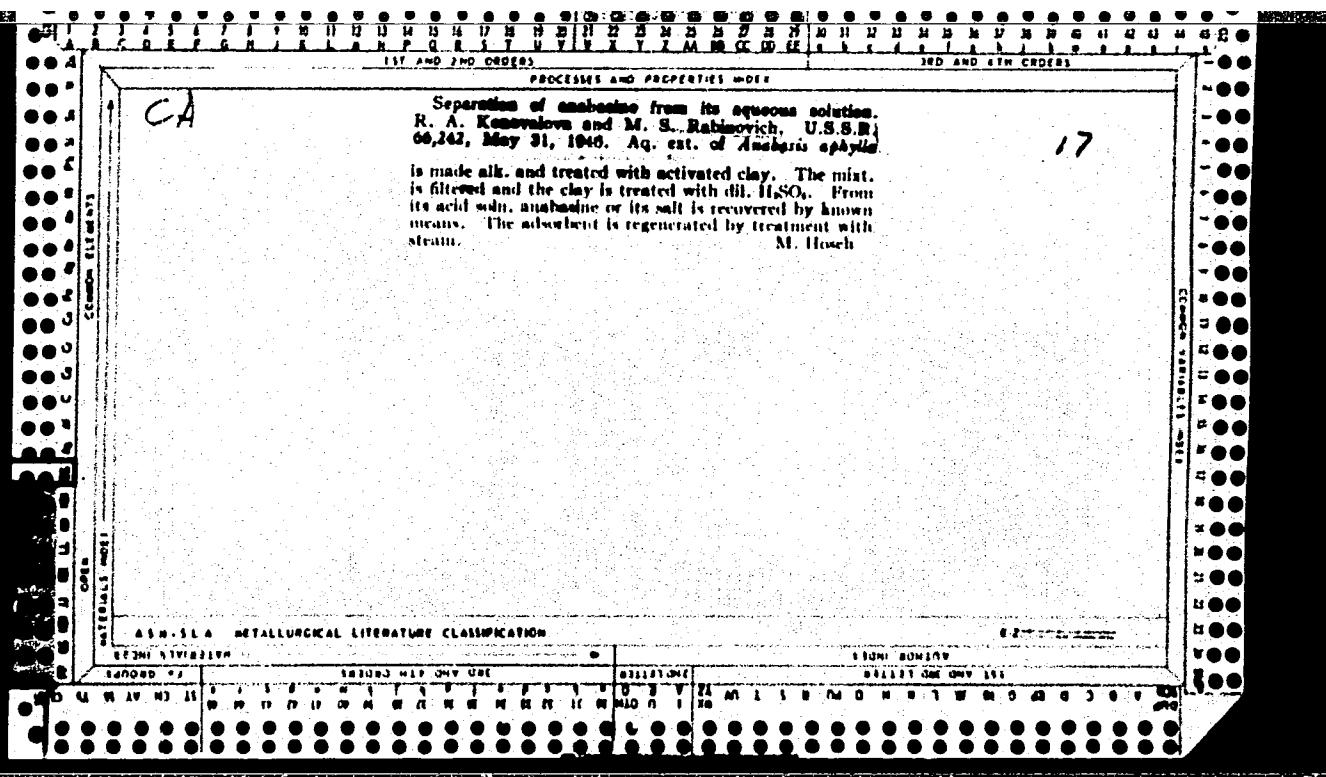


APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013438

RABINOVICH, Prof. M. S.

Mbr., Lab. Chem. Alkaloids, All-Union Sci. Res. Chemico-Pharmaceutical Inst. im. S. Ordzhonikidze, Moscow, -cl49-. Dir., Chair 1st Surgical Medical Faculty, -c1949-. "On Alkaloid Delphamine from Delphinium Sp. 1. On the Alkaloids of the Species of Delphinium," Zhur. Obshch. Khim., 12, Nos. 7-8, 1942; "Alkaloids Obtained from Dipsacus Azureus Schrenk," ibid., 18, No. 8, 1948; "A New Soviet Anesthetic Cocaine," Med. Prom. SSSR, No. 3, 1949; "Life Time of Heavy Mesons," Uspekhi Fiz. Nauk, 37, No. 4, 1949; "Aconitic Alkaloids: IV, Delartine," Zhur. Obshch. Khim., 19, No. 7, 1949;





Ed

PROCESSES AND PROPERTIES INDEX																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
<p>Alkaloids of the Himalayan Scopolia Aneadus Juridice (Link of Otto). M. S. Rubtsova and R. A. Konovalova, <i>J. Gen. Chem. (U.S.S.R.)</i> 16, 2121-5 (1946) (in Russian). — <i>A. Juridice</i>, which was previously shown to be of interest in alkaloid manuf. (G. K. Kremer, <i>Formatsiya</i> 1939, No. 10, 21), contains more alkaloids than the common variety of <i>S. scopolia carniolica</i>. The ground root (300 g.) was extd. with 5% NH₄OH and benzene for 6 hrs., after which the soln. was decanted and replaced with C₆H₆, the process being repeated 6 times. The org. ext. was extd. with 10% H₂SO₄, the resulting sulfate treated with 25% NH₄OH, and the base extd. with C₆H₆. Evapn. of the ext., followed by removal of the 1st crop and diln. of the mother liquor with R₁₂O, gave a total of 2.8 g. <i>hyoscyanine</i>, m. 101-3°. The mother liquor was extd. with 10% AcOH, the soln. neutralized with NaHCO₃, extd. with R₁₂O, made alk. with NH₄OH, and extd. with C₆H₆. The R₁₂O ext. after evapn., soln. in 5% HCl, and treatment with AuCl₄, gave 0.47 g. <i>hyoscyanine chloroaurate</i>, m. 101-3°, for a total yield of 3 g., i.e., 1% of the root wt. The C₆H₆ ext. on evapn. gave 2.3 g. oily base, which yielded: <i>picrotoxin</i>, m. 212-14° (from H₂O); <i>HCl salt</i>, m. 223-5° (from abs. EtOH); <i>HBr salt</i>, m. 233° (decompn.); <i>nitrate</i>, m. 200-7° (decompn.; from Me₂CO-EtOH); <i>free base</i> (by treatment of the HCl salt with NaOH), b.p. 150°, has the compn. Cu₁₁ON₄ and appears to be identical with <i>cushcushgrine</i>. No <i>scopolamine</i> was found. Further study of the plant at various ages of growth may indicate the possibility of formation of the tropane cycle from the cushiongrine cycle, or vice versa. G. M. Kosolapoff</p>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="3" style="text-align: left; padding: 2px;">ASH-SLA METALLURGICAL LTD.</td> <td colspan="3" style="text-align: center; padding: 2px;">EQUATORIAL TROPICAL FOREST</td> <td colspan="3" style="text-align: right; padding: 2px;">ZONE BORDER</td> </tr> <tr> <td colspan="3" style="text-align: left; padding: 2px;">TANZANIA</td> <td colspan="3" style="text-align: center; padding: 2px;">AFRICA</td> <td colspan="3" style="text-align: right; padding: 2px;">AFRICA</td> </tr> <tr> <td colspan="3" style="text-align: left; padding: 2px;">SOUTH AFRICA</td> <td colspan="3" style="text-align: center; padding: 2px;">SOUTH AFRICA</td> <td colspan="3" style="text-align: right; padding: 2px;">SOUTH AFRICA</td> </tr> <tr> <td style="text-align: center; padding: 2px;">N</td> <td style="text-align: center; padding: 2px;">S</td> <td style="text-align: center; padding: 2px;">W</td> <td style="text-align: center; padding: 2px;">E</td> <td style="text-align: center; padding: 2px;">N</td> <td style="text-align: center; padding: 2px;">S</td> <td style="text-align: center; padding: 2px;">W</td> <td style="text-align: center; padding: 2px;">E</td> <td style="text-align: center; padding: 2px;">N</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center; padding: 2px;">60</td> <td style="text-align: center; padding: 2px;">70</td> <td style="text-align: center; padding: 2px;">80</td> <td style="text-align: center; padding: 2px;">90</td> </tr> <tr> <td style="text-align: center; padding: 2px;">10</td> <td style="text-align: center; padding: 2px;">20</td> <td style="text-align: center; padding: 2px;">30</td> <td style="text-align: center; padding: 2px;">40</td> <td style="text-align: center; padding: 2px;">50</td> <td style="text-align: center</tr></table>																		ASH-SLA METALLURGICAL LTD.			EQUATORIAL TROPICAL FOREST			ZONE BORDER			TANZANIA			AFRICA			AFRICA			SOUTH AFRICA			SOUTH AFRICA			SOUTH AFRICA			N	S	W	E	N	S	W	E	N	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50	60	70	80	90	10	20	30	40	50
ASH-SLA METALLURGICAL LTD.			EQUATORIAL TROPICAL FOREST			ZONE BORDER																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
TANZANIA			AFRICA			AFRICA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
SOUTH AFRICA			SOUTH AFRICA			SOUTH AFRICA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
N	S	W	E	N	S	W	E	N																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50	60	70	80	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
10	20	30	40	50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

RABINOVICH, M.S.

KONOVALOVA, R.A.; RABINOVICH, M.S.

Academician Aleksandr Pavlovich Orehov; on the 75th anniversary
of his birth. Khim.nauka i prom. 1 no.4:469-471 '56. (MLBA 9:11)
(OREHOV, ALEXANDER PAVLOVICH, 1881-?)

PA 19/49T16

RABINOVICH, M. S.

USSR/Chemistry - Alkaloids, From Aug 48

Dipsacus Azureus Schrenk,
Chemistry - Dipsacus Azureus Schrenk,
Alkaloids From

"Alkaloids Obtained From Dipsacus Azureus
Schrenk," M. S. Rabinovich, R. A. Konovalova,
All-Union Sci Res Chem Phys Inst imeni S.
Ordzhonikidze, Lab of Chem of Alkaloids, Moscow,
64 pp

"Zhur Obshch Khim" Vol XVIII (LXX), No 8

Isolated crystalline alkaloid of composition
C₁₀H₇O₄N by oxidation. Further study showed

19/49T16

USSR/Chemistry - Alkaloids, From Aug 48

Dipsacus Azureus Schrenk (Coata)

alkaloid to be identical with gentianine, a
base isolated from Gentiana Kirilovi (fan.
Gentianaceae). Alkaloid from Erythrea centaurium
-- erythrocine -- also identical with gentianine.
This is another instance of presence of same
alkaloid in completely different botanical
families. Submitted 12 Apr 47.

19/49T16

New Soviet anesthetic—*convocaine*. M. S. Rabingvich.
Med. Prom. S.S.R. 1949, No. 3, 37-8. "Convocaine (*p*-aminobenzoyleltropine) (I) is rated high as an anesthetic for eye-ear-nose operations. It appears to be superior to cocaine by absence of action on corneal epithelium, intraocular pressure, pupil diam., and ocular accommodation. I is prep'd. by condensation of tropine with *p*-nitrobenzoyl chloride, followed by reduction. Tropine is obtained from *Consolidae subhirsuta* by water extrn., sapon., and methylation by HCO_2H and CH_3O . G. M. K."

RABINOVICH, M. S.

33047

Uspekh sovetskoy nauki v oblasti khimii alkaloidob. (k 10-leyiyu so dny, smerti
akad. A. P. orekhova) Med. Prom-st, Sssr, 1949, No 5, c. 20-24

SO: Letopis' Zhurnal'nykh Statey, Vol. 45, Moskva, 1949

RABINOVICH, I. S.

27058 RABINOVICH, I. S. Klinike i prishiznennoy diagnostike bnutrisoricheskikh
Tronkov. Trudy Glav. vojen. Gosпитала Vecrash. Sil SSSR in. akad.
Burdenko. VIF. 6. N., 1949, s. 223-37. - Bibliogr: 14 nazv.

SO: Litopis, No. 32, 1948.

RABINOVICH, N.S., KONOVALOVA, R.A.

3035C

Ob adsorbsionnom myetodye vydelyeniya anabazina. Zhurnal drukl. khimii, 1949, № 9,
s. 995-1001. - Bibliogr: s. 1001

SC: LETOPIS' №. 34

USSR/Chemistry - Alkaloids, Aconitic
Delartine Jul. 49

"Aconitic Alkaloids: IV, Delartine," M. S. Rabinovici,
R. A. Konovalova, Lab Chem of Alkaloids, All-Union
Sci Res Chemicophar Inst imeni Ordzhonikidze, Moscow,
9 pp

"Zhur Obshch Khim" Vol XIX, No 7

From *Delphinium* sp., found in Middle Tyan'-Shan near
Kys-art Pass, were prepared crystalline delphamine
and noncrystalline delartine (I). I may be the same
as "Alkaloid C," extracted by Goodson from Delphin-
ium aescis; Soviet authors, however, claim initial
discrepancy. Alkaline hydrolysis of I produces:

2/50T33

USER/Chemistry - Alkaloids, Aconitic
Delartine (Cont'd) Jul 49

crystalline amino alcohol (lycoctone) and a non-
crystalline nitrogen-containing acid (delartinic
acid). From delartinic acid were prepared two
crystalline substances, one of them anthranilic
acid. Submitted 24 Jun 47.

2/50T33

17

CA

Adsorption method of isolation of anabasine. M. S. Rubanovich and R. A. Kosovalova (S. Ordzhonikidze Chem. Pharm. Inst., Moscow). Zhur. Priklad. Khim. (J. Applied Chem.) 22, 995-1001 (1949).—Anabasine can be adsorbed from aq. media by numerous adsorbents, affording a sepn. from numerous materials that accompany the alkaloid in exts. of *Anabasis spicifolia*. The most active substances are alum gel, infusorial earth, gumbrin (Caucasian), and mkt-Alistic bentonite; kaolin is almost ineffective as is perlmutt. For removal of 80-85% of the base at least 15-20% (by wt.) bentonite is necessary; best results occur at pH 9. Temp. effect is slight (4-20° range) in 40-5-min. treatment. Desorption is best done by treatment with dil. H_2SO_4 , which after 3 cycles with 2N H_2SO_4 can remove 84% of the base giving solns. contg. up to 6% of the alkaloid; the solns. require addnl. purification in this step, showing a considerable loss of color. Org. solvents are thus completely eliminated. Steam treatment with 40% NaOH gives 100% desorption but the solns. are extremely dil. (0.25-0.3%).
exts. with steam and acid solns. The acid method of desorption is satisfactory at 2:1 ratio of the aq. acid to the amt. of the adsorbent. G. M. Kondapoff

1951

RABINOVICH, M. S.

"The alkaloids of some varieties of the bean family. X. New alkaloids from *Piptanthus lanus* M. Pop. Piptatin and piantamine." by R. A. Konovalova, B. S. Dickina, and M. S. Rabinovich. (p. 773)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1951, Volume 21, No. 4

"APPROVED FOR RELEASE: Tuesday, August 01, 2000

CIA-RDP86-00513R0013438

RABINOVICH, M. S. and KONOVALOVA, R. A.

"Anesthetizing Derivatives of Convoline and Convolamine," 1952.

U-1982, 22 May 52

APPROVED FOR RELEASE: Tuesday, August 01, 2000

CIA-RDP86-00513R0013438

232T36

RABINOVICH, M. S.

USSR/Chemistry - Pharmaceuticals, Sep 52
Alkaloids

"Concerning Aconite Alkaloids. V. Eldeline
and Eldelidine," M. S. Rabinovich, All-Union
Sci Res Chem-Phar Inst imeni S. Ordzhonikidze

"Zhur Obshch Khim" Vol 22, No 9, pp 1702-1710

A new cryst alkaloid of the compn $C_{25}H_{41}O_7$,
named eldeline, was isolated from *Delphinium*
elatum which is grown in Altay Kray. Eldeline
is an ester which forms acetic acid and a
cryst aminoalc of the compn $C_{25}H_{41}O_7$ when
sapond.

232T36

RABINOVICH, M. S.

USSR/ Chemistry Alkaloids

Card : 1/1 Pub. 151 - 33/33

Authors : Rabinovich, M. S.

Title : About Sophora pachycarpa alkaloids. Pachycarpidin a new alkaloid

Periodical : Zhur. ob. khim. 24/8, 1473 - 1476, August 1954

Abstract : A new alkaloid (pachycarpidin, C₁₅H₂₂N₂O₂ · H₂O) derived in crystalline form from the overground part of the Sophora pachycarpa plant, is described. Both oxygen atoms of the new alkaloid appear in the form of N-oxide groupings. Four USSR references (1933 - 1953).

Institution : The S. Ordzhonikidze All Union Scientific Research Chemical Pharmaceutical Institute, Laboratory of the Chemistry of Alkaloids

Submitted : April 23, 1954

Rabinovich, M.S.

Aconite alkaloids. VI. Elatine. M. S. Rabinovich
(S. Ordzhonikidze All-USSR Sci. Research Chem. &
Pharm. Inst., Moscow). Zhur. Obshchel Khim. 24, 2242-5
(1954); cf. C.A. 48, 4534f.—The alkaloid elatine, $C_{11}H_{15}NO_3$, obtained from *Delphinium elatum*, m. 222-5° (from
EtOH or MeOH), [α]_D 3.4° ($CHCl_3$) (*HCl* salt, decomp.
180-210°; perchlorate, decomp. 175-200°). Hydrolysis of
this (3 g.) with 12 ml. *N* NaOH in 10 ml. 90% EtOH 3 hrs.
at reflux gave elatidine, $C_{11}H_{14}NO_2$, m. 172-4° [from Me_2CO],
[*HBr* salt hemihydrate, m. 200.5-7.5° (from Me_2CO);
HCl salt, m. 197-8.5°; an *Ac* deriv. (isolated as *HCl* salt,
decomp. 205-8°) is formed by treating the base with $AcCl$
16 hrs. at 60-60°], and elatinic acid, $C_{11}H_{12}NO_3$, m. 184-5°
[this refluxed with 10% HCl gave anthranic acid and an
unknown acid, m. 183-5° (decompn.)]. The behavior of
elatinic acid resembles that of delartinic acid (cf. C.A. 44,
1118i). G. M. Kosolapoff

Rabinovich, M. S.

27
8
4E4
Purification of soluble cadmium salts used in the preparation of luminesphores from traces of other metals. T. B. Gapon, A. M. Gurvich, A. A. Mettler, M. S. Rabinovich, V. V. Strukov, and L. A. Usatova. U.S.S.R. 101,671. Dec. 31, 1955. The soln. of Cd salts is passed consecutively through 3 chromatographic columns, the 1st of which is

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013438

~~At₂O₃ and dimethylglyoxime, Buu~~ M. Hosen

for our

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013438

RABINOVITCH, M. S.

Aconite alkaloids. II. Alkaloids of the plants of Delphinium dictyocarpum. A. D. Kuzovkov, P. S. Massagetov, and M. S. Rabiuovich (S. Ordzhonikidze All-Union

Khim. 25, 178-81; J. Gen. Chem. (U.S.S.R.) 25, 101-3 (1955)(Engl. translation).—Extrn. of the plant with C_6H_6 in the presence of NH_4OH gave from 6.5 kg. plant roots a

"APPROVED FOR RELEASE: Tuesday, August 01, 2000

CIA-RDP86-00513R001343

All-Union Sci. Research Chem.-Pharm. Inst.), Zhur. Obshchey

(2) M
SOM

Rabinovich et al.

M. Sulgin, O. P. Vanichkina and M. S. Rabinovich. U.S.-
S.R. 104,232, Nov. 25, 1936. Sulgin is obtained by action
of guanylurea salts with sulfanilamide. M. Hirsch

APPROVED FOR RELEASE: Tuesday, August 01, 2000

CIA-RDP86-00513R0013

RABINOVICH; M.S.

✓ Chromatographic (selective adsorption) methods of thoroughgoing purification of zinc and cadmium salts for phosphors manufacture. A. M. Gurvich, T. B. Capon, and M. S. Rabinovich. *Khim. Prom.* 1956, 31-4. Cd salts were purified by selective adsorption from Fe and Cu salts by running the soln. through a column of Al_2O_3 . The Fe concn. in the purified product was 0.2-0.3 parts, of Cu <0.1 p.p.m. of the anhydrous product. A selective adsorption method.

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013438

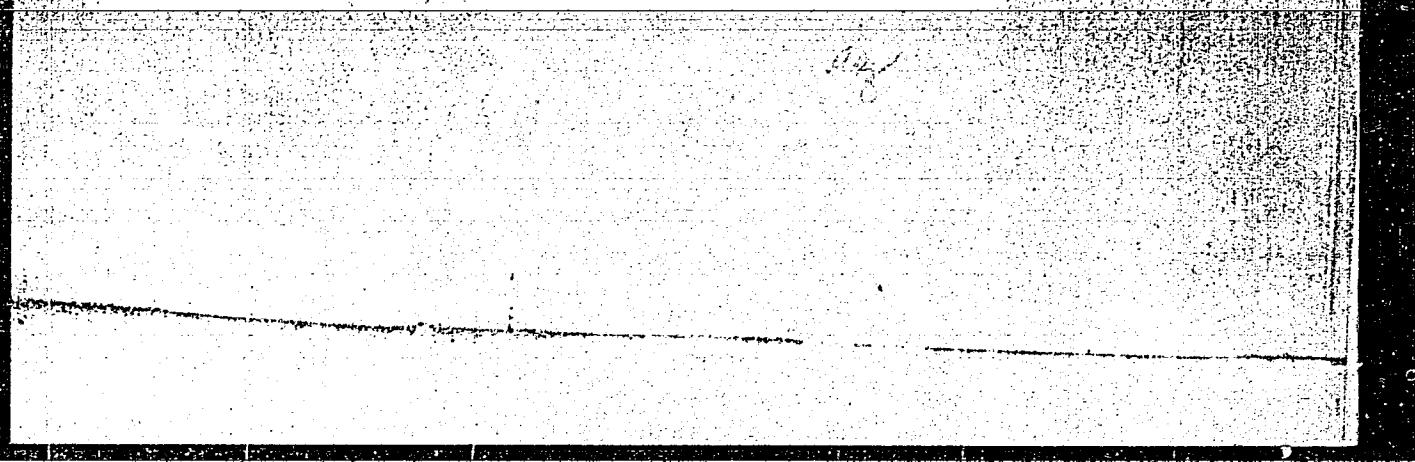
11-44 Sternberg

PM 8/1

FEBINOVICH M S

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013438

"APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013438



APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R0013438

RABINOVICH, M. S.

8
4E2c

Purification of soluble zinc and cadmium salts.
Gapon, A. A., Mettler, M. S., Rabinovich, E. I., Strukova,
V. V., Strukov, and L. A. Osatova. U.S.S.R. 105,642, June
25, 1987. Addn. to U.S.S.R. 90,924. For prepn. of phosphors, solns. of Zn and Cd salts are passed through a cation-exchange column and then through a column charged with dimethylglyoxime and activated C. M. Hesch

file
MT

48-3-730

SUBJECT: USSR/Luminescence

AUTHORS: Gurvich A.M., Gapon T.B and Rabinovich M.S.

TITLE: Chromatographic Methods of Purifying Raw Materials Used for Synthesis of Luminophores (Khromatograficheskiye metody ochistki syr'ya, primenayemogo v sinteze lyuminoforov)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957,
Vol 21, #5, pp 656-660 (USSR)

ABSTRACT: Aluminum oxide yields satisfactory results as a chromatographic adsorbent in purifying $CdSO_4$ and salts of other cations (possessing a lesser ability of sorption on Al_2O_3 than Cd^{2+}). A solution of zinc sulfate can be purified from copper traces by filtering through a column containing ZnS in a mixture with Al_2O_3 . Especially good results were obtained by filtering solutions to be purified through a column containing dimethyl-glyoxime. Using this method, salts of cadmium, alkali and alkali-earth metals can be purified from Cu, Fe, Ni and Co up to a high degree of purity, which practically does not depend on

Card 1/2

PRESENTED BY:

SUBMITTED: No date indicated

AVAILABLE: At the Library of Congress.

APPROVED FOR RELEASE: Tuesday, August 01, 2000 CIA-RDP86-00513R001343

Card 2/2

RABINOVICH, M. [S.]

PA 54T72

USSR/Nuclear Physics - Accelerators Nov/Dec 1946
Nuclear Physics - Synchrotron

"Investigation of the Phasing Properties of the Relativistic Resonance Accelerators: I, Synchrotron," M. Rabinovich, Lebedev Phys Inst, Acad Sci USSR, 7 pp

"Journal of Physics USSR" Vol I, No 6

Investigation of phasing properties of a synchrotron by means of method of finite differences; derivation of equation of phasing, showing stability of its solution; investigation of stationary and quasi-stationary working regime of accelerator, demonstration that radiation of electrons does not effect phasing properties; and derivation of formula for limiting energy value obtainable by synchrotron. Received, 30 Jul 1946

54T72

RABINOVICH, M. [S]

PA 54173

USSR/Nuclear Physics - Accelerators Nov/Dec 1946
Nuclear Physics - Cyclotron

"Investigation of the Phasing Properties of the
Relativistic Resonance Accelerators: II, Cyclotron
With Varying Frequency of Dee Voltage (Phasotron),"
M. Rabinovich, Lebedev Phys Inst, Acad Sci USSR, 3 pp

"Journal of Physics USSR" Vol I, No 6

Describes derivation of difference equation of phas-
ing for phasotron, demonstration of stability of
solution of law of variation of frequency in the
stationary case; and reduction of problems of phas-
ing and beam intensity in relativistic resonance ac-
celerators to problem of pendulum with large ampli-

USSR/Nuclear Physics - Accelerators Nov/Dec 1946
(Contd)

tude, slowly varying parameters, and external momen-
tum. Received, 30 Jul 1946.

54T73

RABINOVICH, M. I.

PA 50T76

USSR/Nuclear Physics - Synchrotron Feb 1947
Nuclear Physics - Betatron - Radiation
Distribution

"Visible Radiations in a Synchrotron," M. Rabino-
vich, 2 pp

"Uspekhi Fiz Nauk" Vol XXXIII, No 2

Author states that both Ivanenko and Pomeranchuk
directed their attention toward the electromagnetic
radiation evidenced in the synchrotron and betatron
type accelerators. Presents summary of information
he obtained from publications by Ivanenko, Artsimo-
vich, Rabinovich, L. Foldy, Schott Blewett, and
Elder. Also refers to "Science News Letter" 51,
339, 31 May 1947. IC

50T76

82788

8/058/60/000/004/002/016
A003/A001

21.2100

Translation from: Referativnyy zhurnal. Fizika, 1960, No. 4, p. 28, # 7807

AUTHORS: Kolomenskiy, A.A., Petukhov, V.A., Rabinovich, M.S.

TITLE: A New Accelerator of Charged Particles: The Ring-Shaped Phasotron 19

PERIODICAL: V sb.: Nekotoryye voprosy teorii tsiklicheskikh uskoriteley. AN
SSSR, Moscow, 1955, pp. 7-12

TEXT: The operational principle of the ring-shaped phasotron, a cyclic accelerator with a constant magnetic field, was briefly explained. The ring magnet consists of equal sections, each of which contains 2 sectors with the angular openings ν_1 and ν_2 . The directions of the magnetic field in adjacent sectors are taken to be of opposite signs, so that the curvature centers of the orbit segments O_1 and O_2 lie on different sides of the ring. In relation to O_1 the field increases along the radius ($n_1 < 0$), in relation to O_2 it decreases ($n_2 > 0$). The alternation of the signs of n_1 and n_2 in the case of sufficiently large values of $|n_1|$, n_2 and the number of sections N (n of the order of hundred, N of the order of several tens) ensures strong focusing both in the radial and the axial (along the axis of the installation) directions. At the same time the

Card 1/2

82788

S/058/60/000/004/002/016
A003/A001

A New Accelerator of Charged Particles: The Ring-Shaped Phasotron

fast increase in the absolute magnitude of the magnetic field in the narrow ring (e.g., according to the law $H \propto \exp(n\beta/r)$, where $\beta = r - r_{\text{init}}$) makes the acceleration from low initial energy values possible. The essential advantage of the ring phasotron is the absence of the critical energy at $V_2 > V_1$.
The motion of the particles in the ring-shaped phasotron is briefly considered.

Ya.M.

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

VYKSLER, V. I.; SKOBEL'TSYN, D. V., akademik, redaktor; RABINOVICH, M. S.,
redaktor; MAKUNI, Ye. V., tekhnicheskiy redaktor

[Atomic particle accelerators] Uskoriteli atomykh chastits.
Moskva, Izd-vo Akademii nauk SSSR, 1956. 46 p. (MIRA 9:3)

1. Chlen-korrespondent AN SSSR (for Vekseler)
(Particle accelerators)

A cyclotron with secticed magnet system

CERN-Symposium on High Energy Accelerators and Pion
Physics

Geneva 11-23 June 56
In Branch #5

Kolomenskiy A.S.

KOLOMENSKIY, A.A.; PETUKHOV, V.A.: RABINOVICH, M.S.

Annular synchrocyclotron. Prib.i tekhn.eksp.no.2:26-28 S-0 '56.
(MLRA 10:2)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR.
(Cyclotron)

VEKSLER, V. I.; YEFREMOK, D.V.; MINTS, A.L.; VEYSBEY, M.M.; VODOP'YANOV;
P.A.; GASHOV, M.A.; ZBYBLITS, A.I.; IVANOV, P.P.; KOLOMENSKIY,
A.A.; KOMAR, Ye.G.; MALYSHOV, I.P.; MONOSOV, R.A.; NEVYAZHSKIY,
I.Kh.; PETUKHOV, V.A.; RABINOVICH, M.S.; GUBCHINSKIY, S.M.; SI-
NEL'NIKOV, K.D.; STOLOV, A.M.

Ten Bev energy synchrocyclotron built by the Academy of Sciences
of the U.S.S.R. Atom.energ. no.4:22-30 '56. (MLRA 9:12)
(Cyclotron)

RABINOVICH, M.S.

BALDIN, MICHAILOV, RABINOVICH, M.S.

CARD 1 / 2

PA - 1880

SUBJECT USSR / PHYSICS
 AUTHOR BALDIN, A.M., MICHAILOV, V.V., RABINOVICH, M.S.
 TITLE The "Osculation" method for Investigations of the Free Oscilla-
 tions in Accelerators.
 PERIODICAL Zurn.eksp.i teor.fis, 31, fasc.6, 992-1001 (1956)
 Issued: 1 / 1957

By means of the osculation theory worked out here the influence exercised by the free oscillations on the injection process and the acceleration in cyclic accelerators of any type can be described from a uniform point of view. The free oscillations in any magnetic field \vec{H} with a symmetry plane are studied. The lines of force are supposed to intersect a certain plane under a constant angle. From all possible orbits a closed one is separated, which is located on the aforementioned plane and is called "equilibrium orbit". The equation of free oscillations is $q'' + q(\sigma) = 0, q(\sigma) = R_0^{-2}(\sigma) [1 - n(\sigma)]$. Here $n(\sigma)$ is the index of the magnetic field; $n(\sigma) = (R_0(\sigma)/H(\sigma, 0)) \cdot (\partial H(\sigma, Q)/\partial Q)|_{Q=0}$. Here σ denotes the length along the equilibrium orbit and Q - the normal distance from this orbit. The solution of the aforementioned oscillation equation can also be written down in the following form: $q(\sigma) = F(\sigma) \cos [\mu\sigma/L + \alpha(\sigma)], F(\sigma) = |Dq(\sigma)|; \alpha(\sigma) = \arg (Dq(\sigma))$. $F(\sigma)$ and $\alpha(\sigma)$ are periodic functions with the period L . The free oscillations can thus always be represented as sine functions with the variable amplitude $F(\sigma)$, the phase $\alpha(\sigma)$ and with the frequency μ/L . In the theory of

Zurn.eksp.i teor.fis, 31, fasc.6, 992-1001 (1956) CARD 2 / 2 PA - 1880
accelerators two problems are investigated when examining the free oscillations: a) the collision of particles with the injector plates, b) collision of particles with the walls of the vacuum chamber. φ assumes practically any value of from $-F(\sigma)$ to $+F(\sigma)$ in the case of any azimuth. The curve $\varphi = F(\sigma)$ can be considered as a tangent of the orbit of the particle. The orbit of the particle is enclosed between the curves $\varphi = +F(\sigma)$ and, in the cases which are of interest in practice, it takes up the entire domain between the tangents after numerous cycles. The determination of the tangent is much more simple than the computation of the orbit of the particles. At the same time all principal problems of the theory of accelerators which are connected with free oscillations can be solved if the tangent is known. When solving the problem of a collision with the walls of the chamber it is necessary to examine the function $f(\sigma) = \dot{\varphi}(\sigma)/\dot{\varphi}(\sigma_i)$ which characterizes the ratio of the oscillation amplitudes at any azimuth and at the azimuth of the injector. These considerations are then specialized for an accelerator the magnets of which are cut apart as well as for accelerators with strong focussing.

INSTITUTION: Physical Institute "P.N.LEBEDEV" of the Academy of Science in the USSR

RABINOVICH, Matvey Samsonovich, doktor fiziko-matematicheskikh nauk;
PAYNBAYM, I.B., redaktor; GUBIN, M.I., tekhnicheskiy redaktor

[Particle accelerators] Uskoriteli zariazhennykh chastits.
Moskva, Izd-vo "Znanie," 1957. 45 p. (Vsesoiuznoe obshchestvo
po rasprostraneniu politicheskikh i nauchnykh znanii. Ser.8,
nos. 5/6) (MLRA 10:3)

(Particle accelerators)

18. Multiple Advantages Claimed for Cyclotron Magnet System

"On Increasing the Energy Limit and Improving Focusing in Synchrotrons," by Ye. M. Moroz and M. S. Rabinovich, Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR, Pribory i Tekhnika Eksperimenta, No 1, Jan/Feb 57, pp 15-21

"Discusses a sectional magnet system for synchrotrons with fixed frequency. It is proposed that the ratio of the homogeneous fields in adjacent sectors should be equal to some constant value x . The necessary relation between rotational frequency and energy and the required particle focusing can be obtained by choosing the proper form for the boundary for the field sectors. A rational choice of the factor x makes it possible to avoid passing through the damaging resonance of betatron oscillations.

"The proposed magnet system permits extending the range of cyclotron energies by several hundred Mev, improving orbital stability in average cyclotrons, attaining greater beam intensity, and decreasing the amplitude of radio-frequency voltage in the cyclotron dees." -- Authors' abstract (U)

RABINOVICH, M.S., LOBANOV, Yu. N., LOGUNOV, V.N., OVCHINNIKOV, E.P., PETUKHOV, V.A.
RUSONOV, V.D.

"Experimental Investigations of Physical Processes Facilitating
the Capture of Electrons Injected into the Betatron," paper presented at
CERN Symposium, 1956, appearing in Nuclear Instruments, No. 1, pp. 21-30,
1957

AUTHOR

RABINOVICH M.S.

89-5-5/22

TITLE

Some Problems of the Theory of the Synchrophasotron of the Academy
of Science of the U.S.S.R. for 10 BEV.

PERIODICAL

(Nekotoryye voprosy teorii sinkrofazotrona AN SSSR na 10 BEV - Russian)
Atomnaya Energiya, 1957, Vol 2, Nr 5, pp 431 - 444 (U.S.S.R.)

Received 6/1957

Reviewed 7/1957

ABSTRACT

The present paper gives a survey of the theory of the motion of particles in synchrophasotrons. This theory served as a basis for the selection of the parameters of the synchrophasotron of the Academy of Science of the USSR. There exists a certain spatial (closed) synchrophasotron orbit. There further exists a family of momentaneous orbits which oscillate round the synchrophasotron orbit which corresponds to equilibrium. These radial phase oscillations are connected with the modification of the phase of the particle. However, the particles usually do not move along these orbits, for most of them perform free vertical and radial oscillations round the momentary orbits. To these three types of motion there correspond three time scales. The author investigates this problem on the basis of the synchrophasotron mentioned in the heading: 1) The position of the equilibrium orbit changes essentially during acceleration, i.e. within 3,300.000 microseconds. 2) A radial phase oscillation lasts from 800 to 1000 microseconds. 3) The free vertical and radial oscillations last from 7 to 1 microseconds. According to the theory it is possible to investigate all three of these motions separately. Important exceptions are formed by resonance

Card 1/2

Some problems of the Theory of the synchrophasotron of the 89-5-5/22
Academy of Science of the U.S.S.R. for 10 BEV

phenomena and intermediary operations. Because of the independence of these motions the free motions of particles can be investigated without taking the process of acceleration into account, and, vice-versa, the process of acceleration can be investigated without taking the free oscillations into account. The connection between these motions can be looked upon as a correction, such a connection occurs above all on the occasion of the so-called fissional oscillations. The present work is divided into the following parts: the free oscillations of particles, the influence exercised by the distortions of the magnetic field upon the motion of the particles, resonance with fast oscillations, resonance with slow phase oscillations, injection.

(With 11 illustrations and 1 table).

ASSOCIATION
PRESENTED BY
SUBMITTED 6.8.1956
AVAILABLE Library of Congress
Card 2/2

APPENDIX 13438

VERKSLER, V.I.; KOLOMENSKIY, A.A.; PETUKHOV, V.A.; RABINOVICH, M.S.

Physical principles involved in the construction of the 10 Bev
proton synchrotron. Atom.energ.supplement no.4:5-14 '57. (MIRA 10:10)
(Synchrotron)

RABDINOVICH, M S

Distr: 4E3d/4E4b

3939

THE METHOD OF ENVELOPES FOR INVESTIGATING
FREE OSCILLATIONS IN ACCELERATORS.¹⁷ A. M.
Baldin, V. V. Mikhailov, and M. S. Rabdinovich (Academy
of Sciences, USSR). Soviet Phys. JETP 4, 857-64 (1957)

5
1-RML
2

A derivation is given of the equation for free oscillations in accelerators with an arbitrary magnetic field having a plane of symmetry. To solve the basic problems of the theory of free oscillations, which arise in the design of accelerators, an envelope method has been developed in which the study of individual orbits is replaced by consideration of the envelope of the trajectory of the particles over a large number of revolutions. The application of the method is illustrated for accelerators with a sector magnet and for strong-focusing accelerators. (auth)

RML //

Rabinovich, M. S.

25-7-10/51

AUTHOR: Rabinovich, M.S., Doctor of Physico-Mathematical Sciences

TITLE: Not for Destruction, but for Construction (Ne dlya razrusheniya,
a dlya sozidaniya)

PERIODICAL: Nauka i Zhizn', 1957, # 7, p 5 (USSR)

ABSTRACT: The author, a physicist, took part in the construction of the world's biggest accelerator of charged particles - the synchrophasotron, which will enable scientists to observe what is going on in the world of atoms. The new accelerator is set up in the Joint Institute of Nuclear Research, where scientists from 16 different countries have joined efforts to study the laws of nature. There is no higher goal in life, says the author, than struggle for peace so that the achievements of science could be used for the benefit of mankind. The article contains one photo.

ASSOCIATION: Joint Institute of Nuclear Research (Ob'yedinennyi institut yadernykh issledovaniy)

AVAILABLE: Library of Congress

Card 1/1